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SURVEY OF UNITED STATES URANIUM MARKETING ACTIVITY

July 1980

U.S. Department of Energy
Assistant Secretary for Resource Applications
Office of Uranium Resources and Enrichment
Division of Resource Assessment Operations

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Introduction

As part of a continuing assessment of uranium procurement for nuclear power plants in the United States the Resource Assessment Operations Division, Office of Uranium Resources and Enrichment, U. S. Department of Energy (DOE), has completed a survey of U. S. uranium marketing and procurement activity in 1979. Reports on uranium marketing activity have been published since 1968 by the Atomic Energy Commission, the Energy Research and Development Administration, and the Department of Energy.

Information for the present survey was received from 60 utilities with nuclear reactor projects, 40 present or potential uranium producers, and 5 reactor manufacturers. The information provided by these respondents provides virtually complete coverage of U. S. uranium marketing activity. The respondents are listed in Attachment A.

The survey requested data on domestic uranium purchase commitments, uranium imports and exports, unfilled requirements, U_3O_8 available for sale by producers, inventories of domestic- and foreign-origin uranium, and prices under existing contracts between domestic primary producers and domestic buyers. A separate DOE release (Grand Junction Office no. 80-104, June 25, 1980) presented information on actual and planned capital expenditures for uranium production facilities that was also gathered in the survey.

Purchase Commitments of Domestic Uranium by U. S. Buyers

Table I shows that during 1979 U. S. buyers contracted with U. S. primary producers for an additional 24,800 tons of domestic-origin U_3O_8. These new commitments were offset by a 9,400-ton reduction in January 1, 1979, delivery commitments under previous contracts. The reductions were primarily from revised schedules of utility captive production. Total delivery commitments for the 1979-1985 period remain about the same as those reported in a July 1, 1979 survey of uranium prices.[1/]

Table II shows reported annual delivery commitments of domestic-origin uranium from domestic primary producers to domestic buyers as of January 1, 1980, and January 1, 1979. Actual deliveries reported for 1979 were 2,600 tons less than was reported at the beginning of 1979. This downward revision follows a pattern evidenced in previous years where actual deliveries were less than scheduled at the beginning of the year, and can be attributed to the fact that some deliveries were not made because of litigation and others were delayed because of reactor and fuel cycle rescheduling. Delivery commitments increased in 1980 and 1981 due in part to rescheduling of 1979 deliveries. Scheduled deliveries generally increased for the years after 1982 since most commitments entered into during 1979 were in contracts for which the period of delivery extends past 1982.

Optional Uranium Deliveries

Scheduled optional uranium deliveries as of January 1, 1978, January 1, 1979, and January 1, 1980, are listed in Table III; they represent a portion of the quantities reported in Table II. Table III shows a decrease since January 1, 1979, in options for each year in the 1980-1987 period but an increase of 2,400 tons U_3O_8 in options for delivery in the post-1987 period.

Uranium Supply Under Litigation

This report includes data on delivery commitments for contracts under litigation unless it appears that the uranium has not been, or will clearly not be, delivered. About 17,300 tons of the commitments listed in Table II are from contracts identified as being under litigation.

1/ G. F. Combs, Jr., "The U. S. Uranium Market--1978-1979," GJO-108(79).

Table I

DOMESTIC COMMERCIAL URANIUM DELIVERIES AND COMMITMENTS* AS OF JANUARY 1, 1979 AND JANUARY 1, 1980

	TONS U_3O_8
PAST DELIVERIES PLUS FORWARD COMMITMENTS (1/1/79)	312,900
CHANGES DURING 1979:	
TOTAL NEW PURCHASES	24,800
CHANGES TO 1/1/79 COMMITMENTS**	(9,400)
NET CHANGE	15,400
PAST DELIVERIES PLUS FORWARD COMMITMENTS (1/1/80)	328,300
DELIVERIES:	
PRIOR TO 1979	123,500
DURING 1979	16,500
FORWARD COMMITMENTS (1/1/80)	188,300

* DELIVERY COMMITMENTS BETWEEN DOMESTIC PRODUCERS AND BUYERS; TRANSFERS BETWEEN PRODUCERS OR BETWEEN BUYERS ARE NOT INCLUDED.

**PRIMARILY DUE TO REVISED PRODUCTION SCHEDULES FOR CAPTIVE PRODUCTION.

Table II

URANIUM DELIVERY COMMITMENTS DOMESTIC PRIMARY SOURCES TO DOMESTIC BUYERS TONS U_3O_8

	ANNUAL		CUMULATIVE	
YEAR OF DELIVERY	AS OF 1/1/79	AS OF 1/1/80	AS OF 1/1/79	AS OF 1/1/80
1966-78	–	–	123,500	123,500
1979	19,100	16,500	142,600	140,000
1980	20,000	21,500	162,600	161,500
1981	19,300	20,000	181,900	181,500
1982	19,400	19,400	201,300	200,900
1983	17,800	17,400	219,100	218,300
1984	14,100	16,000	233,200	234,300
1985	12,800	13,900	246,000	248,200
1986	10,900	11,200	256,900	259,400
1987	10,500	11,400	267,400	270,800
1988	9,500	10,500	276,900	281,300
1989	9,400	9,500	286,300	290,800
1990	7,300	7,300	293,600	298,100
1991-2000	19,300	30,200	312,900	328,300

INCLUDES OPTIONAL QUANTITIES (SEE TABLE III)

Prices and quantities of material under litigation, on the other hand, are not included in our data on prices because disputes are more likely to involved pricing problems than the quantities to be delivered. As litigations involving uranium deliveries and price disputes are resolved, the data will be adjusted accordingly.

Figure 1 compares the components of annual domestic U_3O_8 sales commitments for the 1979-1980 period that were reported by domestic producers and buyers as of January 1, 1980. The components shown are material under litigation, options, captive production, and "firm" contracts. We use the term "firm" loosely because any contract can become subject to litigation, rescheduling, etc.; however, we wish to distinguish one group of contracts.

Uranium Prices

The present survey extends from 1988 to 1990 the period of coverage for average "contract prices" and average prices of "market price" contracts. "Contract prices" relate to prices of procurement where prices and their escalation factors are determined when the contract is signed. In "market price" contracts prices are determined at or sometime before time of delivery and are based on prevailing prices. Most market price contracts contain floor (or minimum) prices which provide a lower limit on the eventual settled price. These floor prices and means of escalation are determined when the contract is signed and thus can be reported like contract prices.

Table IV, Column 2, shows the average reported contract prices including prices of settled market price contracts. The average prices in Table IV are stated in terms of year-of-delivery dollars and, as such, reflect buyers' estimates of escalation as appropriate for their contracts. Market price settlements are included with "contract prices" since, as settled prices, they are similar to "contract prices." This procedure also provides the most comprehensive average price for actual 1979 deliveries. The average 1979 price was $23.85 per pound U_3O_8 compared to $21.60 reported as of July 1, 1979[1] and $18.95 reported as of January 1, 1979[2].

The average floor prices of market price contracts range from $48.25 in 1980 to $88.55 in 1990 (Table IV, Column 4). Also shown in Table IV are the percentages of annual commitments or deliveries for which price data were reported. Thus, for 1979 prices were reported for 89 percent of the total of contract price and settled market price deliveries. The percentage coverage of prices for contract price and market price settlement commitments is slightly higher than that for floor prices of market price contracts for the 1979-1980 period. However, in both cases the percentages are considered sufficiently high for the data to provide a good representation of prices.

Distribution of Prices

Figure 2 depicts, in $5 increments, the annual distribution of contract price commitments (along with settlements of market price contracts and the average prices) for the 1979-1990 period. Those price increments covering 15 percent or more of any year's delivery commitments are shaded.

The annual ranges and averages of floor prices for market price contracts during the 1980-1990 period are shown in Figure 3. Ranges and average price settlements of market price contracts for 1979-1980 are also indicated. It should be noted that, as these prices are reported in year-of-delivery dollars, changes in the ranges of average prices may reflect changes in expectations of inflation rates as well as underlying contract trends.

Price Settlements of Market Price Contracts

Table V shows price settlements of market price contracts as of January 1, 1978, July 1, 1978, January 1, 1979, July 1, 1979, and January 1, 1980. Typically prices of all the

1/ Grand Junction Office, DOE, Release No. 79-149, "DOE Reports Results of Uranium Price Survey," November 1979.

2/ DOE/RA-0038, "Survey of United States Uranium Marketing Activity," August 1979.

Table III

OPTIONAL URANIUM DELIVERIES, DOMESTIC PRIMARY PRODUCERS TO DOMESTIC BUYERS

TONS U_3O_8

YEAR OF DELIVERY	ANNUAL AS OF:			CUMULATIVE AS OF:		
	1/1/78	1/1/79	1/1/80	1/1/78	1/1/79	1/1/80
1980	800	700	200	800	700	200
1981	600	400	300	1,400	1,100	500
1982	400	500	300	1,800	1,600	800
1983	900	700	500	2,700	2,300	1,300
1984	800	1,000	600	3,500	3,300	1,900
1985	600	700	600	4,100	4,000	2,500
1986	600	700	600	4,700	4,700	3,100
1987	600	700	600	5,300	5,400	3,700
1988 ON	800	1,900	4,300	6,100	7,300	8,000

Table IV

AVERAGE CONTRACT PRICES AND SETTLED MARKET PRICE CONTRACTS, AND AVERAGE FLOOR PRICES OF MARKET PRICE CONTRACTS

YEAR	AVERAGE OF CONTRACT PRICES AND SETTLED MARKET PRICE CONTRACTS		AVERAGE FLOOR PRICES OF MARKET PRICE CONTRACTS	
	$/LB U_3O_8 (YR-OF-DEV'RY $)	% OF COMMITMENTS FOR PRICES REPORTED	$/LB U_3O_8 (YR-OF-DEV'RY $)	% OF MARKET PRICE COMMITMENTS WITH FLOOR PRICES FOR PRICES REPORTED
1979	$23.85*	89*	$ –	–
1980	25.40*	87*	48.25	60
1981	30.45*	85*	51.25	70
1982	32.55*	78*	52.95	64
1983	36.35	81	55.90	74
1984	36.35	77	61.45	75
1985	38.50	83	65.05	71
1986	49.60	69	69.10	62
1987	48.05	77	73.45	69
1988	51.20	86	79.30	74
1989	55.55	86	83.20	80
1990	62.30	86	88.55	87

* INCLUDES PRICE SETTLEMENTS OF MARKET PRICE CONTRACTS

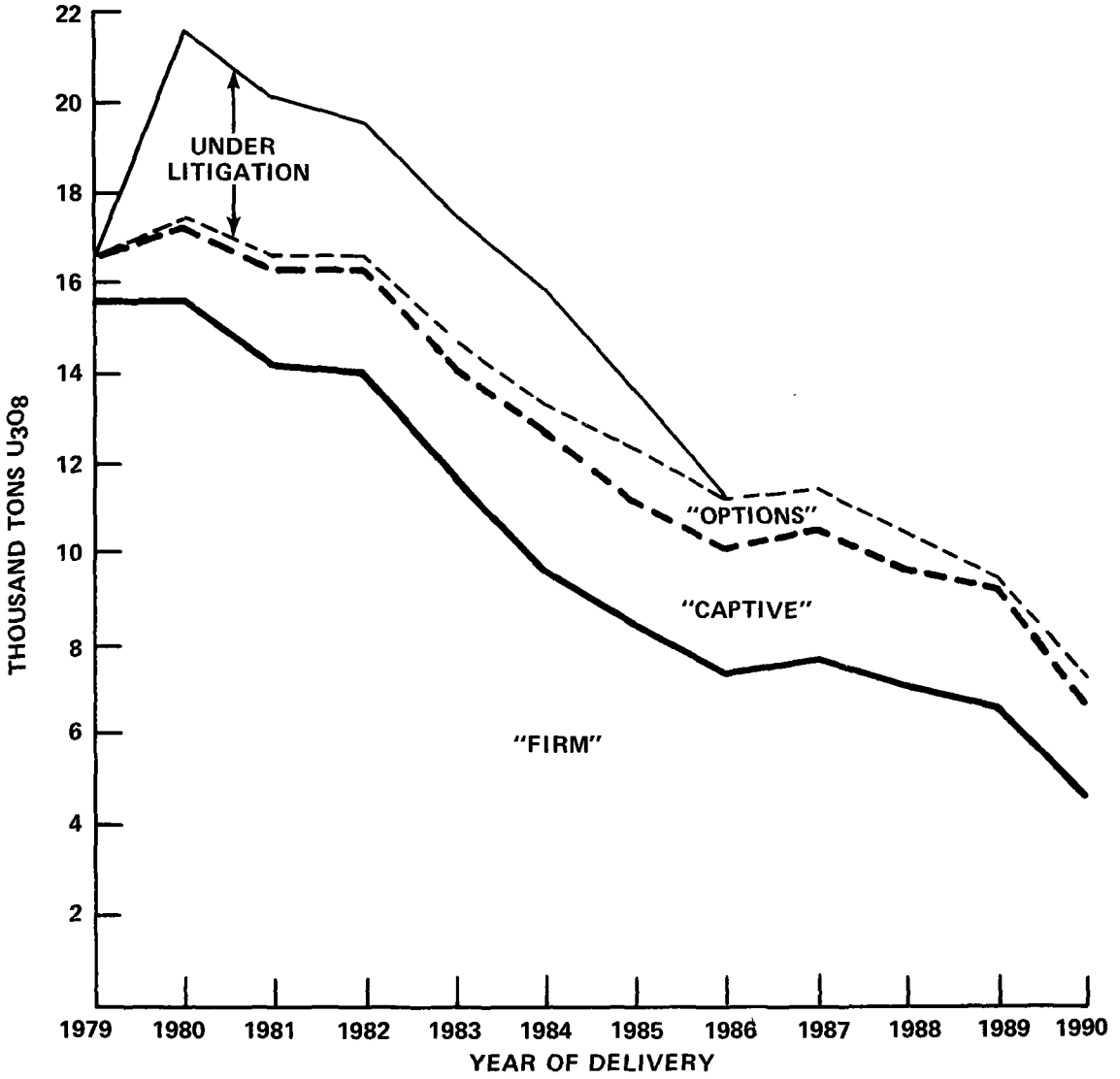

Figure 1. COMPONENTS OF DOMESTIC SALES COMMITMENTS

Table V

PRICE SETTLEMENTS OF MARKET PRICE CONTRACTS

YEAR-OF-DELIVERY DOLLARS

YEAR OF DELIVERY	AVG. PRICE PER LB.	TONS U_3O_8	AVG. PRICE PER LB.	TONS U_3O_8	AVG. PRICE PER LB.	TONS U_3O_8
	AS OF 1/1/78		AS OF 7/1/78		AS OF 1/1/79	
1977	$41.50	800	$ –	–	$ –	–
1978	$43.95	1,100	$43.65	1,400	$43.80	1,700
1979	$ –	–	$44.65	600	$44.30	600
	AS OF 7/1/79		AS OF 1/1/80			
1977	$ –	–	$ –	–		
1978	$ –	–	$ –	–		
1979	$43.55	1,400	$42.55	2,400		
1980	$ –	–	$45.80	600		

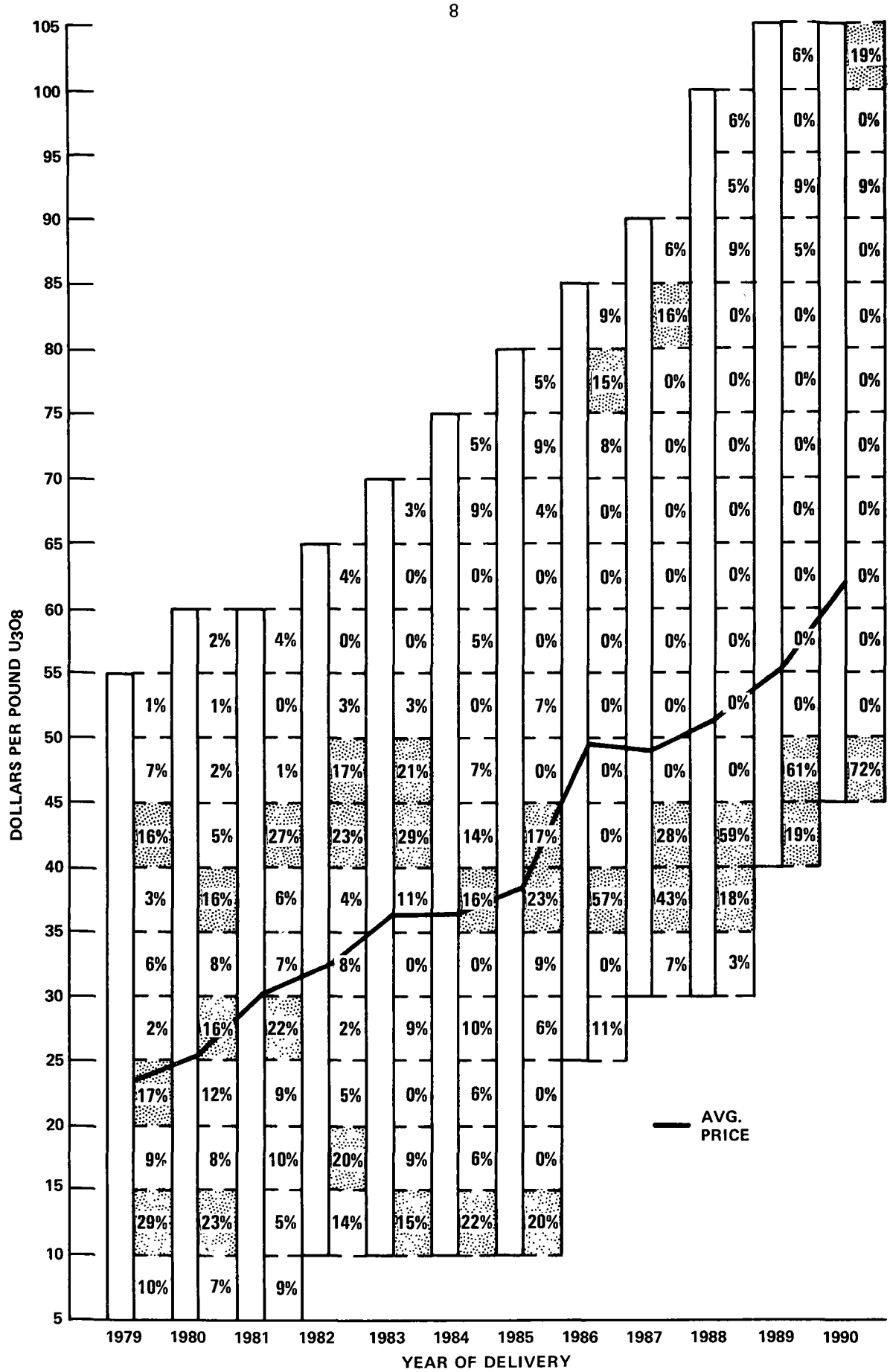

Figure 2. DISTRIBUTION OF U_3O_8 PRICES, 1/1/80 CONTRACT PRICES AND MARKET PRICE SETTLEMENTS

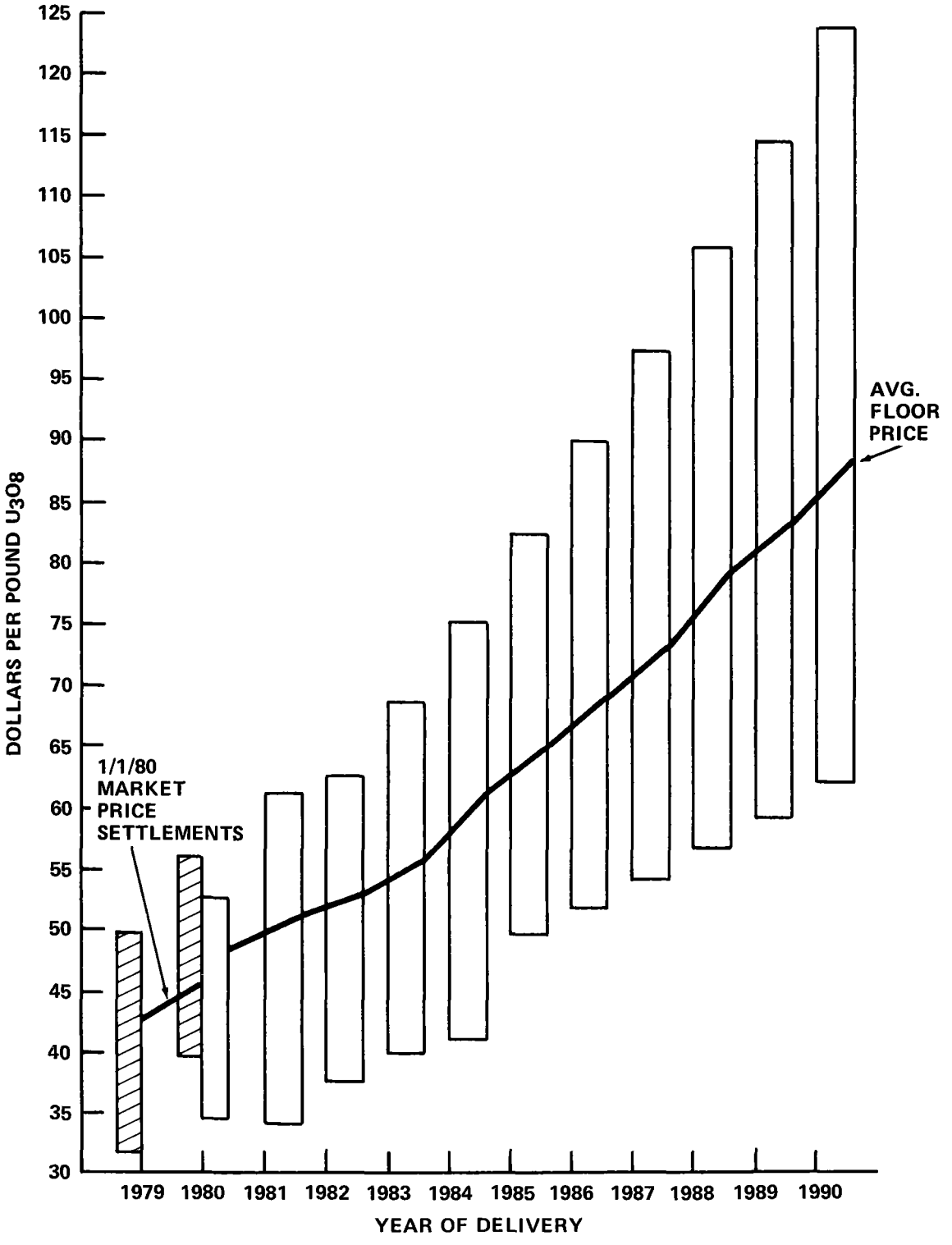

Figure 3. RANGE OF REPORTED FLOOR PRICES OF MARKET PRICE CONTRACTS, 1/1/80 SURVEY

uranium delivered in the year prior to the survey would have been settled, as well as a portion of the market price commitments for the year in which the survey is taking place. Hence, from semiannual surveys several average prices can be reported in this category for a given year. A distinction must be made between a "price settlement of a market price" contract and the "market price." For example, the settled price of a market price contract that contains a floor price may be the floor price and not the market price, if the market price were below the floor price. For the purpose of our survey, we consider a market price contract one where price is based on, but not necessarily equal to, the prevailing market price. Thus, market price usually must be determined before settling the price of a market price contract even though the settled price might be another value, such as the floor price or a price derived from a formula in the contract. Some market price contracts discount the settled market price, while others average the market price and some other value.

To determine the extent to which the settled price varied from market prices in market price contracts, we asked the survey respondents to report both, where appropriate. For 1979 delivery five out of twenty-one contracts reported a settled price that differed from the market price agreed upon. In four of these five contracts the market price was higher than the settled price. For 1980 delivery three of eight contracts had settled prices different than the market price, with two of the three having the market price higher than the settled price.

As seen in Table V the settlements for 1979 prices as of January 1, 1980, are less than the prices reported in the two 1979 surveys. Since these market price settlements are reported in year-of-delivery dollars, the real decrease in market price settlements, after adjusting for inflation, is even greater than the absolute decline.

Procurement Arrangements and Trends

Table VI presents the distribution, by year of delivery, of the types of uranium procurement employed -- contract price, market price, and "other." Contract price and market price procurement have already been described. Settled market price contracts are included with contract price commitments in reporting prices, but they are included in the market price category with regard to distribution of procurement type. The "Other" procurement category refers to arrangements that fall outside the contract price or market price categories. It primarily involves cases where buyers directly control uranium production (captive production). Two-thirds of the "Other" arrangements are captive production.

The percentage of contract price procurement steadily declines from a high of 72 percent in 1979 to a low of 21 percent in 1986, rises to 33 percent in 1989 and falls to 24 percent in 1990. Meanwhile, the percentage of "Other" procurement, which was very low in 1979 (6 percent), steadily increases to 49 percent in 1990. Market price procurement increases from 22 percent in 1979 to 41 percent in 1984, then declines to 27 percent in 1990. Since more delivery commitments have been made for those earlier years where the percentage of contract price procurement is high, contract price procurement remains the dominant form of contracting for the 1979-1990 period as of January 1, 1980. Note that these percentages apply only to existing delivery commitments and will change as more uranium is procured for delivery in this period.

Contract price procurement was used almost exclusively until 1975 when market price contracting became the major approach. In 1976 "Other" procurement, primarily captive production, dominated. During 1977 slightly over half the uranium purchased was market price procurement, with the remainder contract price procurement (about half of which involved 1977-1978 deliveries). In 1978 market price procurement was again dominant, accounting for 70 percent of new procurement, with 20 percent in the "Other" category. During 1979 market price contracting, while remaining the major type of procurement, accounted for slightly less than half of new uranium purchases. About one-third of 1979 procurement fell in the "Other" category, and one-fourth was contract price purchasing.

Table VII presents a more detailed breakdown on the use of floor prices in market price contracts. Three categories are presented: (1) those with specific floor prices; (2) those where the floor price is related to production costs; (3) those with no floor price

Table VI

TYPES OF URANIUM PROCUREMENT AS OF JANUARY 1, 1980

YEAR OF DELIVERY	PERCENTAGE OF DELIVERIES BY TYPES OF PROCUREMENT		
	CONTRACT PRICE	MARKET PRICE	OTHER
1979	72	22	6
1980	60	24	16
1981	48	28	24
1982	45	29	26
1983	39	38	23
1984	28	41	31
1985	30	35	35
1986	21	41	38
1987	28	35	37
1988	31	29	40
1989	33	28	39
1990	24	27	49
1979-1990	41	31	28

Table VII

FLOOR AND CEILING PRICE ARRANGEMENTS IN MARKET PRICE CONTRACTS AS OF JANUARY 1, 1980

YEAR OF DELIVERY	PERCENTAGE OF MARKET PRICE DELIVERIES			
	PRICE FLOOR	COST FLOOR	NO FLOOR PRICE	CEILING PRICE
1980	64	12	24	10
1981	80	10	10	11
1982	78	10	12	11
1983	61	30	9	10
1984	55	36	9	11
1985	60	37	3	13
1986	60	40	0	18
1987	61	39	0	21
1988	62	21	17	19
1989	59	22	19	22
1990	76	24	0	31
1980-1990	65	26	9	15

provision. About 90 percent of the market price commitments for the 1980-1990 period have some provision for floor price in the contract.

In the January 1, 1980, survey we requested for the first time that buyers indicate whether any of their market price contracts had ceiling (maximum) prices. As shown in Table VII, 10 percent of the market price contracts for 1980 delivery contain ceiling prices. The percentages of such contracts with ceiling prices for subsequent deliveries vary, reaching a maximum of 31 percent in 1990. For the 1980-1990 period about 15 percent of market price contracts had a provision for a ceiling price.

Uranium Raw Materials Activities by Utilities

Of 60 utilities with nuclear power projects responding to this survey, 19 (32 percent) indicated that they are directly involved in uranium raw materials activities -- exploration, ownership of reserves, involvement in mine development, and production. Providing "front-end" money as part of a procurement agreement would not constitute direct involvement by a utility. Types of activities and frequency listed were as follows: exploration (18 companies), control of reserves (9), mining (8), and production (3). Note that a utility may be engaged in more than one raw material activity.

Foreign Uranium Commitments

Historical. Table VIII presents historical U. S. purchases of U_3O_8 from and sales to foreign companies for commercial uses. These data do not include foreign-origin uranium purchased by U. S. companies and subsequently resold to foreign customers. Purchases for domestic end-use have been made from five countries and total 9,600 tons U_3O_8.

Sales commitments (exports) as used in this report refer to deliveries of domestic-origin uranium to foreign buyers. Since such customers may have the uranium further processed in the U. S., the uranium may not leave the U. S. for some time. Annual deliveries of domestic uranium to foreign buyers varied considerably in the 1966-1979 period, with a low of 100 tons U_3O_8 in 1972 and a high of 3,400 tons in 1978, for a total of 16,500 tons U_3O_8.

Current. Table IX shows annual planned U. S. U_3O_8 procurement from foreign sources (imports) and sales commitments to foreign buyers (exports) for the 1980-1990 period. As in Table VIII, the import commitments only include foreign-origin uranium that is intended for domestic end-use. During 1979 U. S. buyers contracted to purchase an additional 1,000 tons of foreign-origin uranium, and cumulative import commitments through 1990 total 19,700 tons U_3O_8.

In 1979 domestic primary producers contracted with foreign buyers in four European and three Asian countries for delivery of an additional 2,800 tons U_3O_8. As shown in Table IX, these producers are scheduled to deliver 2,000 tons U_3O_8 in 1980, but smaller amounts are committed for later years. Although future scheduled exports are less than future scheduled imports, for the past 4 years more uranium has been committed for export by domestic producers than has been committed for import by domestic buyers.

U_3O_8 To Be Available for Sale

To ascertain the domestic uranium potentially available for sale we requested each producer to state the amount of U_3O_8 supply over and above its current sales commitments that the company estimated it would be able to offer for sale each year up to and including 1985. Table X presents the responses for the current survey and two previous surveys. Seventeen of the producers responding to this question in the current survey estimated that they would have available an additional 33,700 tons U_3O_8 through 1985 compared to sixteen producers reporting 41,900 tons available in the January 1, 1979, survey. Four current producers did not answer the question in 1980. The amount available for the 1980-1985 period as of January 1, 1980, is less than half of that reported available as of January 1, 1978.

Table VIII

HISTORICAL U.S. IMPORTS AND EXPORTS OF URANIUM FOR COMMERCIAL USES

TONS U_3O_8

YEAR OF DELIVERY	ANNUAL	CUMULATIVE
FOREIGN-ORIGIN PURCHASE COMMITMENTS FOR DOMESTIC END-USE (IMPORTS)		
1975	700	700
1976	1,800	2,500
1977	2,800	5,300
1978	2,600	7,900
1979	1,700	9,600
SALES COMMITMENTS OF DOMESTIC-ORIGIN URANIUM TO FOREIGN BUYERS (EXPORTS)		
1966	400	400
1967	700	1,100
1968	800	1,900
1969	500	2,400
1970	2,100	4,500
1971	200	4,700
1972	100	4,800
1973	600	5,400
1974	1,500	6,900
1975	500	7,400
1976	600	8,000
1977	2,000	10,000
1978	3,400	13,400
1979	3,100	16,500

Table IX

CURRENT U.S. URANIUM IMPORT AND EXPORT COMMITMENTS AS OF JANUARY 1, 1980

TONS U_3O_8

	FOREIGN-ORIGIN PURCHASE COMMITMENTS FOR DOMESTIC END-USE (IMPORTS)*		SALES COMMITMENTS OF DOMESTIC-ORIGIN URANIUM TO FOREIGN BUYERS (EXPORTS)	
YEAR OF DELIVERY	ANNUAL	CUMULATIVE	ANNUAL	CUMULATIVE
1980	1,800	1,800	2,000	2,000
1981	2,700	4,500	1,000	3,000
1982	2,800	7,300	1,000	4,000
1983	2,500	9,800	900	4,900
1984	2,500	12,300	500	5,400
1985	2,400	14,700	500	5,900
1986–1990	5,000	19,700	1,100	7,000

*INCLUDES 500 TONS OF OPTIONAL PURCHASES

Table X

U_3O_8 OVER AND ABOVE CURRENT SALES COMMITMENTS THAT PRODUCING COMPANIES ESTIMATE THEY WILL BE ABLE TO OFFER FOR SALE AS OF 1/1/78, 1/1/79, AND 1/1/80

YEAR OF DELIVERY	TONS U_3O_8 1/1/78	1/1/79	1/1/80
1980	5,000	2,200	2,600
1981	8,200	4,000	3,100
1982	10,500	6,700	4,300
1983	14,000	8,400	7,100
1984	16,300	10,100	7,800
1985	16,900	10,500	8,800
TOTAL	70,900	41,900	33,700

Table XI

URANIUM INVENTORIES – BUYERS
TONS U_3O_8 EQUIVALENT

	ALL BUYERS		UTILITIES	
	1/1/80	1/1/79	1/1/80	1/1/79
NORMAL	36,100	33,200	27,600	25,600
(FOREIGN-ORIGIN)	(5,300)	(5,200)	(3,400)	(3,000)
ENRICHED	16,200	11,500	15,200	10,000
(FOREIGN-ORIGIN)	(400)	(200)	(400)	(200)
TOTAL	52,300	44,700	42,800	35,600
(FOREIGN-ORIGIN)	(5,700)	(5,400)	(3,800)	(3,200)

Inventories

Table XI presents data on normal and enriched uranium inventories held as of January 1, 1979, and January 1, 1980, by buyers (utilities, reactor manufacturers and fuel fabricators) and that portion held only by utilities. The data are given in terms of tons U_3O_8 equivalent, with the components of foreign-origin uranium and enriched inventories identified separately. These inventories do not include uranium at the enrichment plants except for that amount under usage agreements, which totals 3,400 tons U_3O_8.

As is evident in Table XI, total inventories increased from 44,700 to 52,300 tons U_3O_8 during 1979, with most of this addition due to the increase in inventories of enriched uranium. Last year's survey requested data on enriched uranium inventories for the first time. These inventories become increasingly significant as reactors are delayed, while uranium to fuel these reactors is delivered for enrichment on a relatively fixed schedule. This pattern continued in 1979 as some reactors were shut down temporarily or their operation was delayed.

Of the 60 utilities with nuclear power projects responding to the January 1980 survey, 52 reported holding inventories of normal uranium (27,600 tons U_3O_8 of the total inventory, Table XI), compared with 47 utiliities holding 25,600 tons as of January 1, 1979. The ten utilities with the largest inventories of normal uranium held 48 percent of the total held by utilities, compared with 56 percent held by the ten largest holders as of January 1, 1979.

Inventories held by nineteen domestic primary producers as of January 1, 1980, were reported to be 2,400 tons U_3O_8. This total is 1,000 tons higher than that reported a year ago, but this probably does not represent a true increase in producers' inventories as it was noted in last year's survey that the level of such inventories was understated.

Sales and Loans of Uranium by Buyers

Because of the large inventories held by buyers (especially utilities) and indications that these buyers were entering the market as sellers or loaners of uranium, this survey asked buyers to list sales and/or loans of normal uranium that they had made for delivery after January 1, 1979. Utilities reported having made sales of 500 tons U_3O_8 for 1979 and 1980 delivery as well as loans of 1,600 tons U_3O_8 to be repaid by 1984. Although not every utility provided the name of the company to which it sold or loaned uranium, at least half of the total utility sales and loans were to uranium producers and not to other utilities. Since January 1, 1979, it appears that reactor manufacturers have sold or loaned 1,200 tons U_3O_8, with only 10 percent of this amount in the form of loans.

Unfilled Requirements

Table XII lists the sum of unfilled uranium requirements for reactors in operation, under construction or on order that buyers reported on in the surveys as of January 1, 1978, January 1, 1979, and January 1, 1980. Unfilled requirements are that portion of utilities' total requirements remaining after consideration of their inventories and procurement arrangements. As shown in Table XII, cumulative unfilled requirements for the 1980-1990 period have decreased over 100,000 tons U_3O_8 from January 1, 1978, to January 1, 1980. This change is due to cancellation of reactors, rescheduling of reactors and feed deliveries under enrichment contracts which reduce demand, and to the additional procurement of uranium over that period. Significant reduction occurred during 1978 after the announcement of enrichment contract relief, but these changes were not reported until the beginning of this year because utilities did not have to commit themselves to the new enrichment contracts until October 1979.

Table XII

UNFILLED URANIUM REQUIREMENTS* AS REPORTED 1/1/78, 1/1/79, AND 1/1/80

TONS U_3O_8

YEAR	AS OF 1/1/78 ANNUAL	AS OF 1/1/78 CUM.	AS OF 1/1/79 ANNUAL	AS OF 1/1/79 CUM.	AS OF 1/1/80 ANNUAL	AS OF 1/1/80 CUM.
1980	3,000	3,000	1,100	1,100	400	400
1981	5,700	8,700	3,300	4,400	800	1,200
1982	8,600	17,300	4,200	8,600	1,300	2,500
1983	8,000	25,300	5,600	14,200	1,800	4,300
1984	12,400	37,700	9,500	23,700	4,000	8,300
1985	14,100	51,800	12,000	35,700	4,300	12,600
1986	19,500	71,300	14,900	50,600	9,900	22,500
1987	23,300	94,600	17,000	67,600	11,700	34,200
1988	24,700	119,300	20,300	87,900	12,000	46,200
1989	28,100	147,400	23,700	111,600	15,100	61,300
1990	28,600	176,000	23,500	135,100	14,400	75,700

*ASSUMING TAILS ASSAY OF 0.20 PERCENT, NO RECYCLE

Aggregate Supply and Demand

An aggregate picture of U. S. uranium supply results from combining the various data presented above. Table XIII recaps data from the survey in columns 1 and 5. Column 6 is the computed total of potential U. S. producer deliveries; it includes sales to domestic and foreign buyers and additional U_3O_8 to be available for sale.

Apparent available supply of uranium to U. S. buyers is shown in Column 7 by summarizing their purchase commitments of domestic and foreign uranium as well as additional domestic U_3O_8 to be available for sale. Apparent buyer uranium requirements, Column 8, are obtained by summing purchase commitments -- foreign and domestic -- and unfilled requirements.

These requirements reflect buyers' needs for delivery of normal uranium after consideration of their inventories. Total domestic production (Column 6) exceeds apparent buyer requirements (Column 8) each year up through 1985. However, this relationship only holds if U. S. producers actually produce at these levels and sell all of their estimated additional uranium supply to U. S. buyers.

Several additional points should be noted when examining Table XIII. First, the annual sales commitments to domestic and foreign buyers do not necessarily represent the amounts that will be used in those years. This is especially true with respect to purchase commitments of foreign uranium since there are limitations through 1983 on the amount of foreign uranium which can be enriched for domestic use. Because scheduled deliveries from domestic sources will exceed actual requirements for the next few years, buyer inventories could increase above the current level for the next several years.

Other factors to consider are that the numbers in columns 3 and 5 of Table XIII are incomplete and subject to change. For instance, not all producers provided estimates as to their U_3O_8 available for sale, and those who did respond tempered their responses according to current market conditions. Moreover, respondents' perceptions of supply under litigation would affect the data in columns 3 and 5 and the totals in columns 6, 7, and 8. If a producer judged that he did not have to deliver under a contract in litigation and included this amount in material available for sale, the totals in columns 6 and 7 would be distorted.

Table XIII

U.S. URANIUM SUPPLY AND MARKET SUMMARY

YEARS	(1) SALES COMMITMENTS TO DOMESTIC BUYERS	(2) SALES COMMITMENTS TO FOREIGN BUYERS	(3) ESTIMATED U_3O_8 TO BE AVAIL. FOR SALE	(4) PROCUREMENT OF FOREIGN URANIUM	(5) REPORTED UNFILLED REQ'MT	(6) TOTAL DOMESTIC PRODUCTION POTENTIAL (1+2+3)	(7) TOTAL DOMESTIC SUPPLY (1+3+4)	(8) APPARENT BUYER REQ'MTS (1+4+5)
1980	21,500	2,000	2,600	1,800	400	26,100	25,900	23,700
1981	20,000	1,000	3,100	2,700	800	24,100	25,800	23,500
1982	19,400	1,000	4,300	2,800	1,300	24,700	26,500	23,500
1983	17,400	900	7,100	2,500	1,800	25,400	27,000	21,700
1984	16,000	500	7,800	2,500	4,000	24,300	26,300	22,500
1985	13,900	500	8,800	2,400	4,300	23,200	25,100	20,600
1986	11,200	300		1,000	9,900			22,100
1987	11,400	300		1,000	11,700			24,100
1988	10,500	300		1,000	12,000			23,500
1989	9,500	100		1,000	15,100			25,600
1990	7,300	100		1,000	14,400			22,700

Summary

In 1979 U. S. buyers contracted for a net increase of 15,400 tons U_3O_8 in new procurement after deducting for changes to January 1, 1979, commitments. Export commitments made in 1979 totalled 2,800 tons, while import commitments amounted to 1,000 tons U_3O_8. Buyers' inventories of domestic- and foreign-origin normal and enriched uranium increased to 52,300 tons U_3O_8 during 1979, with the larger part of the increase being in enriched uranium. The average price reported for 1979 deliveries was $23.85 per pound of U_3O_8. Settlements of market price contracts average $42.55 for 1979 delivery and $45.80 for 1980 delivery. Producers expect to be able to offer 33,700 tons U_3O_8 for sale in the 1980-1985 period, about 20 percent less than was estimated in the 1979 survey. Utilities made sales of 500 tons U_3O_8 for 1979-1980 delivery as well as loans of 1,600 tons U_3O_8 that are to be repaid by 1984; more than half of these sales or loans were made to uranium producers. Reactor manufacturers have sold about 1,100 tons U_3O_8 since January 1, 1979, and loaned 120 tons. Unfilled requirements have decreased more than 100,000 tons U_3O_8 since January 1, 1978, and currently total 75,700 tons U_3O_8. Responses to the 1980 survey suggest that there seems to be an adequate supply of uranium to meet U. S. demand at least through 1985.

Attachment A

COMPANIES PROVIDING DATA TO THE 1980 DOE URANIUM MARKETING SURVEY

Utilities

Alabama Power Company
American Electric Power Company
Arizona Public Service Company
Arkansas Power and Light Company
Baltimore Gas and Electric Company
Boston Edison Company
Carolina Power and Light Company
Cincinnati Gas and Electric Company
Cleveland Electric Illuminating Company
Commonwealth Edison Company
Consolidated Edison Company of New York, Inc.
Consumers Power Company
Duke Power Company
Duquesne Light Company
Florida Power Corporation
Florida Power and Light Company
General Public Utilities Corporation
Georgia Power Company
Gulf States Utilities Company
Houston Lighting and Power Company
Illinois Power Company
Iowa Electric and Power Company
Kansas Gas and Electric Company
Long Island Lighting Company
Louisiana Power and Light Company
Maine Yankee Atomic Power Company
Mississippi Power and Light Company
Nebraska Public Power District
New York Electric and Gas Company
Niagara Mohawk Power Corporation
Northeast Utilities Service Company
Northern Indiana Public Service Company
Northern States Power Company
Ohio Edison Company
Omaha Public Power District
Pacific Gas and Electric Company
Pennsylvania Power and Light Company
Philadelphia Electric Company
Portland General Electric Company
Power Authority of the State of New York
Public Service Company of Colorado
Public Service Electric and Gas Company
Public Service Company of Indiana
Public Service Company of New Hampshire
Public Service Company of Oklahoma
Puget Sound Power and Light Company
Rochester Gas and Electric Corporation
Sacramento Municipal Utility District
Southern California Edison Company
South Carolina Electric and Gas Company
Tennessee Valley Authority
Texas Utilities Services, Inc.

Utilities (continued)

Toledo Edison Company
Union Electric Company
Vermont Yankee Nuclear Power Corporation
Virginia Electric and Power Company
Washington Public Power Supply System
Wisconsin Electric Power Company
Wisconsin Public Service Corporation
Yankee Atomic Electric Company

Reactor Manufacturers

Babcock and Wilcox Company
Combustion Engineering, Inc.
General Atomic Company
General Electric Company
Westinghouse Electric Corporation

Uranium Producing Companies

Anaconda Company
Atlas Corporation
Becker Industries
Bokum Resources
Chevron Resources Company
Cleveland Cliffs Iron Company
Continental Oil Company
Cotter Corporation
Earth Sciences, Inc.
Exxon Nuclear Company, Inc.
Federal-American Partners
Freeport Uranium Recovery Company
Gardinier, Inc.
Getty Oil Company
Gulf Mineral Resources Company
Homestake Mining Company
Intercontinental Energy Corporation
International Minerals and Chemical Corporation
Kerr-McGee Corporation
Minerals Recovery Corporation
Mobil Oil Corporation
Newmont Mining Corporation
Nuclear Dynamics
Pathfinder Mines Corporation
Phillips Petroleum Company
Pioneer Nuclear, Inc.
Plateau Resources, Limited
Ranchers Exploration and Development Corporation
Reserve Oil and Minerals Corporation
Rio Algom Corporation
Rocky Mountain Energy Company
Sabine Production Company
Solution Engineering
U. S. Steel Corporation

Uranium Producing Companies (continued)

Union Carbide Corporation
Union Oil Company of California
United Nuclear Corporation
Urangesellschaft, U. S. A.
Western Nuclear, Inc.
Wyoming Mineral Corporation